05 - BELLOWS EXTENSION

PHMD 201: Photography I
Fall Semester 2013, Tuesday / Thursday 11:30am – 2:20pm (29180) in A+D 211 / 213 / 313

Title: Compensation for Bellows Extension - Macro Photography

Objectives: At the completion of this assignment, student will be able to:
1. Accurately correct exposure and compensate for light loss due to bellows extension (macro work).

Overview: The inverse-square law tells us that traveling light diminishes in intensity at an exponential rate – we lose two stops of light for every double in distance traveled. This is true for the sun, for photographic studio lighting, and it is true for the light inside our cameras originating at our lens and being projected onto our film plane. This becomes critical as our lens is moved further and further away from the tilm plane – in other words, during macro / close-up photography. At the completion of this assignment, we will learn how to accurate compensate exposure for the bellows extension as necessary in macro photography. For this assignment, you will make four accurately exposed and developed negatives that push the limits of your camera's bellows (macro) and present the photographed object or scene is a new and revealing way.

Materials: In addition to the usual (camera, tripod, film holders, film, light meter), you will need the following:
- ☐ A long ruler or tape-measure
- ☐ Bellows Extension Hand Out

Vocabulary: Bellows Extension, Exposure Compensation, Inverse-Square Law of Light

Process / Guidelines:
1. You must accomplish this on your own (no help from a partner).
2. You must expose and process a minimum of 4 sheets of film.
3. All four photographs must be entirely different in terms of subject and composition.

You will utilize the Jobo processor to process your film, and the Hasselblad film-scanner to scan it. With the help of your peers, choose the single best photograph and turn in the following:

1. One (1) neutral inkjet print on 8.5x11-inch paper.
2. One (1) layered TIFF or PSD file (downsized to approx. 16x20-inches @ 300 ppi and uploaded to the class server) each with the following layers:
    I. A levels adjustment layer with a defined black (4,4,4) and white point (248, 248, 248).
    II. A global curve adjustment layer
    III. At least one local curve adjustment layer with a layer mask (dodge / burn)

    Files should be approximately 16x20 inches @ 300 ppi.
3. 8.5x11-inch contact sheets for any additional film/images made.

Both files and prints should be free of dust and blemishes.

Breakdown: Craft: 10% | Tech & Tools: 40% | Form & Comp: 30% | Concept: 10% | Directions: 10%

Due Date: **Thurs, Oct 3**: Intro & Demo
Tues, Oct 8: Open Lab
Thurs, Oct 10: 1 print for in-class critique, 1 layered files uploaded to server, Contact Sheet(s)

Calculating Exposure Compensation for Bellows Extension in regards to Close-up Photography

1. Convert the focal length of your lens from millimeters to inches using the chart bellow. Once converted to inches, note which f-stop number (whole or half) that measurement is closest to.

Ex. A 150-mm. lens is equivalent to a 6-in. lens. The number 6 is closest numerically to f. 5.6. ***Note: 5.6****.*

Millimeters		Inches
65 mm	-	2.5 in
75 mm	-	3 in
90 mm	-	3.5 in
110mm	-	4.3 in
135 mm	-	5.3 in
150 mm	-	6 in
180 mm	-	7 in
210 mm	-	8.2 in
250 mm	-	9.8 in
300 mm	-	11.8 in

2. Once you've composed your photograph and extended your bellows, measure your actual bellows extension with a tape measure (rear to front standard). Note that measurement, then use the f-stop scale bellow to calculate the difference between those two noted numbers and thus, your necessary exposure compensation.

Ex. A 150-mm. lens is equivalent to a 6-in. lens. The number 6 is closest numerically to f. 5.6. ***Note: 5.6.*** *Actual bellows extension for a particular shot measures in at about 9.5-in.* ***Note: 9.5****. On the f-stop scale bellow, 9.5 is 1 1/2 stops away from 5. Thus, you must increase your exposure by 1 and 1/2 stops.*

***The numbers you noted have nothing to do with your actual exposure settings and are just used to calculate exposure compensation. Use your light meter to determine exposure adding bellows extension compensation as necessary.**

f-stop Scale

Whole:	**2**		**2.8**		**4**		**5.6**		**8**		**11**		**16**		**22**		**32**
Half:		2.4		3.3		4.8		6.7		9.5		13		19		27	